



## COURSE OUTLINE

The course description is online @ <http://camosun.ca/learn/calendar/current/web/math.html>

Ω Please note: the College electronically stores this outline for five (5) years only.  
It is **strongly recommended** you keep a copy of this outline with your academic records.  
You will need this outline for any future application/s for transfer credit/s to other colleges/universities.

### 1. Instructor Information

(a)	Instructor:	George Ballinger		
(b)	Office Hours:	See below		
(c)	Location:	E256		
(d)	Phone:	250-370-3116	Alternative Phone:	N/A
(e)	Email:	ballinger@camosun.bc.ca		
(f)	Website:	ballinger.disted.camosun.bc.ca		

### 2. Intended Learning Outcomes

(No changes are to be made to these Intended Learning Outcomes as approved by the Education Council of Camosun College.)

Upon completion of this course the student will be able to:

1. Differentiate and integrate inverse trigonometric, hyperbolic and inverse hyperbolic functions.
2. Use integration to find area, volume, arc length, surface area of revolution, work, moments and centroids.
3. Integrate using parts, trigonometric integrals, trigonometric substitution, partial fractions and tables.
4. Evaluate limits, which have indeterminate forms, and calculate improper integrals.
5. Test a sequence for convergence and explain the difference between convergence of a sequence and convergence of a series.
6. Test series for convergence using the integral test, p-test, comparison tests, alternating series test and ratio test and explain the difference between convergence and absolute convergence.
7. Estimate the error in approximating a series using improper integrals and the alternating series remainder.
8. Calculate Taylor polynomials, power series, Taylor series, and Maclaurin series and estimate the error in an approximation using Taylor's Theorem.
9. Determine the interval of convergence of a power series.
10. Graph and analyze parametric curves and find arc length and surface area in parametric form.
11. Graph and analyze curves given in polar coordinates and determine area and arc length in polar form.

### 3. Required Materials

- (a) Texts
- (b) Other

**SEE BELOW**

### 4. Course Content and Schedule

(This section can include: class hours, lab hours, out of class requirements and/or dates for quizzes, exams, lectures, labs, seminars, practicums, etc.)

**SEE BELOW**

### 5. Basis of Student Assessment (Weighting)

(This section should be directly linked to the Intended Learning Outcomes.)

- (a) Assignments

- (b) Quizzes
- (c) Exams
- (d) Other (e.g., Attendance, Project, Group Work)

**SEE BELOW**

**6. Grading System**

*(No changes are to be made to this section unless the Approved Course Description has been forwarded through the Education Council of Camosun College for approval.)*

**Standard Grading System (GPA)**

Percentage	Grade	Description	Grade Point Equivalency
90-100	A+		9
85-89	A		8
80-84	A-		7
77-79	B+		6
73-76	B		5
70-72	B-		4
65-69	C+		3
60-64	C		2
50-59	D	Minimum level of achievement for which credit is granted; a course with a "D" grade cannot be used as a prerequisite.	1
0-49	F	Minimum level has not been achieved.	0

**Temporary Grades**

Temporary grades are assigned for specific circumstances and will convert to a final grade according to the grading scheme being used in the course. See Grading Policy E-1.5 at [camosun.ca](http://camosun.ca) for information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
I	<i>Incomplete:</i> A temporary grade assigned when the requirements of a course have not yet been completed due to hardship or extenuating circumstances, such as illness or death in the family.
IP	<i>In progress:</i> A temporary grade assigned for courses that, due to design may require a further enrollment in the same course. No more than two IP grades will be assigned for the same course. <i>(For these courses a final grade will be assigned to either the 3<sup>rd</sup> course attempt or at the point of course completion.)</i>
CW	<i>Compulsory Withdrawal:</i> A temporary grade assigned by a Dean when an instructor, after documenting the prescriptive strategies applied and consulting with peers, deems that a student is unsafe to self or others and must be removed from the lab, practicum, worksite, or field placement.

**7. Recommended Materials or Services to Assist Students to Succeed Throughout the Course**

**LEARNING SUPPORT AND SERVICES FOR STUDENTS**

There are a variety of services available for students to assist them throughout their learning. This information is available in the College calendar, at Student Services, or the College web site at [camosun.ca](http://camosun.ca).

**STUDENT CONDUCT POLICY**

There is a Student Conduct Policy **which includes plagiarism**. It is the student's responsibility to become familiar with the content of this policy. The policy is available in each School Administration Office, at Student Services, and the College web site in the Policy Section.

ADDITIONAL COMMENTS AS APPROPRIATE OR AS REQUIRED



## Mathematics 101 Calculus 2 Winter, 2017

**Instructor:** George Ballinger  
**Office:** Ewing 256  
**E-mail:** [ballinger@camosun.bc.ca](mailto:ballinger@camosun.bc.ca)  
**Website:** [ballinger.disted.camosun.bc.ca](http://ballinger.disted.camosun.bc.ca) (click the [MATH 101](#) link for course information)  
**Telephone:** (250) 370-3116  
**Timetable:**

Time	Monday	Tuesday	Wednesday	Thursday	Friday
8:30 am - 9:20 am					
9:30 am - 10:20 am					
10:30 am - 11:20 am					Office Hour E256
11:30 am - 12:20 pm	MATH 101-003 Room Y217	MATH 101-003 Room Y217	MATH 101-003 Room Y217	MATH 101-003 Room Y217	MATH 101-003 Room Y217
12:30 pm - 1:20 pm	MATH 101-002 Room Y217	MATH 101-002 Room Y217	MATH 101-002 Room Y217	MATH 101-002 Room Y217	MATH 101-002 Room Y217
1:30 pm - 2:20 pm	Office Hour E256	Office Hour E256	Office Hour E256	Office Hour E256	
2:30 pm - 3:20 pm		A&S Chairs Meeting			
3:30 pm - 4:20 pm					
4:30 pm - 5:20 pm	MATH 126-001 Room Y227	MATH 126-001 Room Y227	MATH 126-001 Room Y227	MATH 126-001 Room Y227	

<b>Important Dates:</b>	January 9	First day of class
	January 23	Fee deadline
	February 13	Family Day (no class)
	February 14-17	Reading Break (no class)
	March 13	Withdrawal deadline
	April 13	Last day of class
	April 14	Good Friday
	April 17	Easter Monday
April 18-22, 24-26	Final exam period	

**Calendar Description:** A continuation of MATH 100. Topics include: inverse and hyperbolic trigonometric functions, applications of integration, integration techniques, L'Hôpital's Rule, improper integrals, infinite series, Taylor series, parametric equations and polar coordinates. ~~Students will complete some assignments using Maple.~~ [4 Credits]

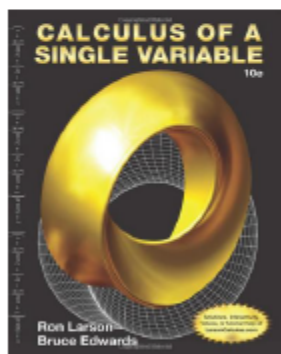
(Source: Camosun College Calendar  
[camosun.ca/learn/calendar/current/web/math.html#MATH101](http://camosun.ca/learn/calendar/current/web/math.html#MATH101))

**Prerequisites:** C in MATH 100 or A in MATH 108.

**Exit Grade:** A grade of at least C (60%) is required when this course is used as a prerequisite for entry into MATH 220, MATH 226 or any other Camosun course.

**Textbook:** Ron Larson and Bruce H. Edwards, *Calculus of a Single Variable*, 10th Edition, Brooks/Cole, 2014.

**Course Content:**



**Chapters and Sections**

5. Logarithmic, Exponential, and Other Transcendental Functions
  - 5.6 Inverse Trigonometric Functions: Differentiation
  - 5.7 Inverse Trigonometric Functions: Integration
  - 5.8 Hyperbolic Functions
7. Applications of Integration
  - 7.1 Area of a Region Between Two Curves
  - 7.2 Volume: The Disk Method
  - 7.3 Volume: The Shell Method
  - 7.4 Arc Length and Surfaces of Revolution
  - 7.5 Work
  - 7.6 Moments, Centers of Mass, and Centroids
  - 7.7\* *Fluid Pressure and Fluid Force*
8. Integration Techniques, L'Hôpital's Rule, and Improper Integrals
  - 8.1 Basic Integration Rules
  - 8.2 Integration by Parts
  - 8.3 Trigonometric Integrals
  - 8.4 Trigonometric Substitution
  - 8.5 Partial Fractions
  - 8.6\* *Integration by Tables and Other Integration Techniques*
  - 8.7 Indeterminate Forms and L'Hôpital's Rule
  - 8.8 Improper Integrals
9. Infinite Series
  - 9.1 Sequences
  - 9.2 Series and Convergence
  - 9.3 The Integral Test and  $p$ -Series
  - 9.4 Comparisons of Series
  - 9.5 Alternating Series
  - 9.6 The Ratio and Root Tests
  - 9.7 Taylor Polynomials and Approximations
  - 9.8 Power Series
  - 9.9 Representation of Functions by Power Series
  - 9.10 Taylor and Maclaurin Series
10. Conics, Parametric Equations, and Polar Coordinates
  - 10.1 Conics and Calculus
  - 10.2 Plane Curves and Parametric Equations
  - 10.3 Parametric Equations and Calculus
  - 10.4 Polar Coordinates and Polar Graphs
  - 10.5 Area and Arc Length in Polar Coordinates

\* *Optional, if time permits.*

<b>Learning Outcomes:</b>	<p>The Intended Learning Outcomes for this course, as approved by the Education Council, are as follows. Upon completion of this course the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Differentiate and integrate inverse trigonometric, hyperbolic and inverse hyperbolic functions.</li> <li>2. Use integration to find area, volume, arc length, surface area of revolution, work, moments and centroids.</li> <li>3. Integrate using parts, trigonometric integrals, trigonometric substitution, partial fractions and tables.</li> <li>4. Evaluate limits, which have indeterminate forms, and calculate improper integrals.</li> <li>5. Test a sequence for convergence and explain the difference between convergence of a sequence and convergence of a series.</li> <li>6. Test series for convergence using the integral test, p-test, comparison tests, alternating series test and ratio test and explain the difference between convergence and absolute convergence.</li> <li>7. Estimate the error in approximating a series using improper integrals and the alternating series remainder.</li> <li>8. Calculate Taylor polynomials, power series, Taylor series, and MacLaurin series and estimate the error in an approximation using Taylor's Theorem.</li> <li>9. Determine the interval of convergence of a power series.</li> <li>10. Graph and analyze parametric curves and find arc length and surface area in parametric form.</li> <li>11. Graph and analyze curves given in polar coordinates and determine area and arc length in polar form.</li> </ol>
<b>A&amp;S Math Lab:</b>	Ewing 224: This drop-in centre is freely available for your use to work on math homework and to seek help from the tutor on staff (see hours posted on door).
<b>Support and Services:</b>	There are a variety of learning support and services available that can assist you throughout your learning. For more information please see <a href="http://camosun.ca/services">camosun.ca/services</a> .
<b>Academic Integrity:</b>	The Department of Mathematics and Statistics has prepared a red handout called <a href="#">Student Guidelines for Academic Integrity</a> to help you interpret college policies involving student conduct, academic dishonesty, plagiarism, etc. It is your responsibility to become familiar with the contents of the document and the college policies it references.
<b>Calculator Policy:</b>	As per department policy, the only calculator permitted for use on tests and the final exam is the Sharp EL-531 (or EL-510R) scientific calculator. No other calculator or any other electronic device including cell phones, electronic translators, smartwatches, iPods, etc. are allowed.
<b>Homework:</b>	There will be periodic assignments to be handed in for marking, details for which will be posted on the course website. LATE ASSIGNMENTS WILL NOT BE ACCEPTED.
<b>Final Exam:</b>	A comprehensive, 3-hour final exam will take place during the final exam period of April 18-22, 24-26. The specific date, time, and location will be announced on or about February 24. You must write the final exam at the scheduled time as per Camosun College's policy on final examinations. See <a href="http://camosun.ca/learn/calendar/current/procedures.html#academic">camosun.ca/learn/calendar/current/procedures.html#academic</a> .

**Grade Calculation:** The final grade will be calculated according to the following breakdown:

Assignments: 15%\*  
Term Tests: 35%  
Final Exam: 50%

\* *Note:* The lowest assignment mark will be dropped when calculating the assignment average. This allows you to miss one assignment without penalty.

**Grade Scale:** Final letter grades are assigned as follows:

0-49	50-59	60-64	65-69	70-72	73-76	77-79	80-84	85-89	90-100
F	D	C	C+	B-	B	B+	A-	A	A+

For information on Camosun College's grading policy, see policy E-1.5 on the webpage [camosun.ca/about/policies/policies.html#education](http://camosun.ca/about/policies/policies.html#education).